

Amendments to the Claims

Please amend Claims 1, 9, 16, 23, 55, 61, 67, 72, 88, 91, 94, and 97. The Claim Listing below will replace all prior versions of the claims in the application:

Claim Listing

1. (Currently Amended) A method of developing computer software using an electronic spreadsheet, the method comprising the computer implemented steps of:
 - creating an object-oriented programming environment for developing computer software by:
 - representing an object in an object-oriented programming language ~~using one or more~~ as an electronic spreadsheet, where the electronic spreadsheet is the object; spreadsheets;
 - coupling content in at least one cell of ~~one of~~ the electronic spreadsheet ~~spreadsheets~~ to a window, where the content in the cell includes instructions for the object; ~~[[and]]~~
 - determining properties of the window based on the content in the cell of the one spreadsheet; and
 - using an object-oriented method defined in at least one cell of the electronic spreadsheet, enabling the object to communicate with another object.
2. (Original) A method of developing computer software according to Claim 1 wherein the step of coupling content in at least one cell of an electronic spreadsheet to a window further includes determining any graphical or functional attributes associated with the content in the cell to construct the window.
3. (Original) A method of developing computer software according to Claim 1 wherein the content in the cell of the spreadsheet corresponds to the properties of the window in that any changes to the properties of the window are reflected in the content in the cell.

4. (Original) A method of developing computer software according to Claim 1 wherein the step of coupling the content is in response to determining that an event has occurred.
5. (Original) A method of developing computer software according to Claim 4 wherein the step of determining that an event has occurred includes determining that a drag and drop event type has occurred in that the content in the cell has been dragged from the cell to the window, and subsequently dropped onto the window.
6. (Previously Presented) A method of developing computer software according to Claim 5 further includes the step of responding to the dropping of the content from the cell onto the window by:
 - (a) processing the content in the cell; and
 - (b) determining the properties of the window based on the content in the cell including determining any desired behavior of the object, including any desired appearance of the window to depict the object based on the content in the cell.
7. (Previously Presented) A method of developing computer software according to Claim 1 wherein the content in one of the cells include any attributes associated with the cell.
8. (Original) A method of developing computer software according to Claim 7 wherein the attributes include any input field, check box, radio button, menu object, popup menu object, label, button, combo box or list box.
9. (Currently Amended) A computer program product comprising:
 - a computer usable medium which includes computer readable program instructions for developing object-oriented computer software with an electronic spreadsheet by:
 - (i) representing an object in an object-oriented programming language using one or more electronic spreadsheets;

(ii) processing content associated with a cell of one of the electronic spreadsheets;

(iii) connecting the content associated with the cell to a window, where the content in the cell includes instructions for the object; [[and]]

(iv) using the content associated with the cell, determining any attributes of the window; and

(v) using an object-oriented method defined in at least one cell of one of the electronic spreadsheets, enabling the object to communicate with another object.

10. (Original) A computer program product according to Claim 9 wherein the instructions for connecting the content associated with the cell to a window further include instructions for assembling any graphical or functional attributes associated with the content in the cell to construct the window.
11. (Original) A computer program product according to Claim 9 wherein the instructions for connecting the content associated with the cell to a window are in response to receiving an indication that an event has occurred.
12. (Original) A computer program product according to Claim 11 wherein receiving an indication that an event has occurred includes determining that a drag and drop event type has occurred such that the content associated with the cell is dragged from the cell to the window, and subsequently dropped onto the window.
13. (Previously Presented) A computer program product according to Claim 12 further includes instructions that respond to the dropping of the content onto the window by:
 - (a) processing the content associated with the cell; and
 - (b) determining the attributes of the window based on the content associated with the cell including determining any desired behavior of the object, including any desired

appearance of the window to depict the object based on the content associated with the cell.

14. (Previously Presented) A computer program product according to Claim 9 wherein the content associated with one of the cells include any data objects associated with the cell.
15. (Original) A computer program product according to Claim 14 wherein the data objects associated with the cell include any input field, check box, radio button, menu object, popup menu object, label, button, combo box or list box.
16. (Currently Amended) An apparatus for developing computer software using an electronic spreadsheet, the apparatus comprising:
 - (a) an object in an object oriented programming language;
 - (b) an electronic spreadsheet representing the object, the spreadsheet having at least one input cell;
 - (c) instructions in the cell, the instructions including instructions for the object;
 - [[and]]
 - (d) a window which reflects the instructions in the cell; and
 - (e) an object-oriented method defined in at least one cell of the electronic spreadsheet, where the method is used to enable the object to communicate with another object.
17. (Previously Presented) An apparatus according to Claim 16 further including an assembly which:
 - processes the instructions in the cell; and
 - connects the instructions from the cell to the window.
18. (Original) An apparatus according to Claim 17 wherein the assembly connects the instructions to the window in response to receiving an indication that an event has occurred.

19. (Original) An apparatus according to Claim 18 wherein receiving an indication that an event has occurred includes determining that a drag and drop event type has occurred where the instructions in the cell are dragged from the cell to the window, and subsequently dropped onto the window to construct the window.
20. (Previously Presented) An apparatus according to Claim 19 wherein the assembly responds to the dropping of the instructions onto the window by:
 - processing the instructions in the cell; and
 - determining the attributes of the window based on the instructions in the cell to define a behavior of the object or appearance for the window to depict the object.
21. (Previously Presented) An apparatus according to Claim 16 wherein the instructions in one of the cells describe attributes associated with the cell.
22. (Original) An apparatus according to Claim 21 wherein the attributes include any input field, check box, radio button, menu object, popup menu object, label, button, combo box or list box.
23. (Currently Amended) A system to develop computer software in a spreadsheet application, the system comprising:
 - means for representing an object in an object-oriented programming language using one or more electronic spreadsheets;
 - means for coupling instructions associated with at least one cell of one of the spreadsheets to a window, where the content in the cell includes instructions for the object; [[and]]
 - means for determining properties of the window based on any instructions associated with the cell of the one spreadsheet; and
 - means for using an object-oriented method defined in at least one cell of one of the electronic spreadsheets to enable the object to communicate with another object.

24.-54. (Cancelled).

55. (Currently Amended) A method of providing text editor functionality in an electronic spreadsheet, the method comprising the computer implemented steps of:
- creating a software programming environment using an electronic spreadsheet in which computer software code is programmed using the spreadsheet;
 - defining a code column to program the computer software code in the spreadsheet, where the spreadsheet corresponds to an object in an object-oriented programming language, the object communicating with another object using a method that is specified in a cell of the spreadsheet; and
 - responding to a request for a newline by inserting a new cell in the code column.
56. (Original) A method according to Claim 55 wherein the code column further includes text editor functionality in that the code column behaves as a text editor.
57. (Original) A method according to Claim 56 wherein the request for a newline occurs when a keystroke input is received while a cell in the code column is selected.
58. (Original) A method according to Claim 57 further includes:
- inserting the new cell below the selected cell;
 - moving cells positioned below the selected cell to create space for the new cell;
 - and
 - correcting any references to the cells which are moved.
59. (Original) A method according to Claim 55 wherein the code column further includes scroll bars.

60. (Original) A method of computer programming according to Claim 58 wherein the scroll bars enable scrolling through the code column independent of any scrolling of the spreadsheet.
61. (Currently Amended) A computer program product comprising:
a computer usable medium having computer readable program instructions which implement a computer programming environment in an electronic spreadsheet by:
creating a software programming environment using an electronic spreadsheet in which computer software code is programmed using the spreadsheet, where the spreadsheet corresponds to an object in an object-oriented programming language, the object communicating with another object using a method that is specified in a cell of the spreadsheet;
creating a code column to program the computer software code in the spreadsheet; and
responding to a request for a newline by introducing a new cell in the code column.
62. (Original) A computer program product according to Claim 61 wherein the code column provides text editor functionality.
63. (Original) A computer program product according to Claim 62 wherein the request for a newline is determined in response to receiving a keystroke input while a cell in the code column is selected.
64. (Original) A computer program product according to Claim 63 further includes instructions for:
inserting the new cell below the selected cell;
adjusting cells positioned below the selected cell to provide space for the new cell; and

in a cell that includes a reference to one of the adjusted cells, correcting the reference.

65. (Original) A computer program product according to Claim 62 wherein the code column further includes scroll bars.
66. (Previously Presented) A computer program product according to Claim 65 wherein the scroll bars enable scrolling through the code column independent of any scrolling of the spreadsheet.
67. (Currently Amended) An apparatus for developing computer software from an electronic spreadsheet comprising:
 - a software programming environment that is implemented in an electronic spreadsheet in which computer software code is programmed using the spreadsheet, where the spreadsheet corresponds to an object in an object-oriented programming language, the object communicating with another object using a method that is specified in a cell of the spreadsheet; and
 - a code column to program the computer software code in the spreadsheet, where the code column is responsive to a request for a newline by introducing a new cell in the code column.
68. (Original) An apparatus according to Claim 67 wherein the code column is a text editor in a column of the spreadsheet.
69. (Original) An apparatus according to Claim 67 wherein the request for a newline occurs when a keystroke input is received while a cell in the code column is selected.
70. (Original) An apparatus according to Claim 67 further includes logic for:
 - inserting the new cell below the selected cell;

adjusting the position of the cells below the selected cell to account for the new cell; and

updating a reference to one of the adjusted cells to reflect a new position for the adjusted cell

71. (Original) An apparatus according to Claim 67 wherein the code column in the spreadsheet includes scroll bars which enable scrolling through the code column independent of any scrolling of the spreadsheet.
72. (Currently Amended) A system for developing computer software in an electronic spreadsheet comprising:
- means for implementing a software programming environment using an electronic spreadsheet in which computer software code is programmed from the spreadsheet, where the spreadsheet corresponds to an object in an object-oriented programming language, the object communicating with another object using a method that is specified in a cell of the spreadsheet;
 - means for defining a code column to program the computer software code in the spreadsheet; and
 - means for responding to a request for a newline by inserting a new cell in the code column.
- 73.-87. (Cancelled).
88. (Currently Amended) A method of programming with an electronic spreadsheet, the method comprising the computer implemented steps of:
- implementing a computer software programming environment using an electronic spreadsheet including creating a software program using the spreadsheet, where the spreadsheet corresponds to an object in an object-oriented programming language, the object communicating with another object using a method call, which is specified in a cell of the spreadsheet;

defining cells in the spreadsheet that are associated with an iterative process repeating for one or more cycles, where the iterative process repeats the same action until a condition no longer applies; and

at each cycle, determining whether to modify content in the cells associated with the iterative process, where resulting modified content causes changes to the software program being created using the spreadsheet.

89. (Original) A method of programming with an electronic spreadsheet as in Claim 88 wherein at least one of the cells associated with the iterative process includes a final value cell, and at least one of the cells includes an initial value cell, where a value in the final value cell is used to modify a value in the initial value cell.
90. (Original) A method of programming with an electronic spreadsheet as in Claim 88 wherein the iterative process is repeated for either a fixed number of times or until a condition defined in a condition cell no longer applies, or begins to apply.
91. (Currently Amended) A computer program product comprising:
a computer readable medium having computer program code which enables a computer software programming environment with an electronic spreadsheet, where the spreadsheet corresponds to an object in an object-oriented programming language, the object communicating with another object using a method call that is specified in a cell of the spreadsheet, the computer software programming environment being created by:
defining cells in a spreadsheet that are associated with an iterative process repeating for one or more cycles, where the iterative process repeats the same action until a condition no longer applies; and
at each cycle, determining whether to modify content in the cells associated with the iterative process, where resulting modified content causes changes to computer software being designed using the spreadsheet.

92. (Original) A computer program product as in Claim 91 wherein at least one of the cells associated with the iterative process includes a final value cell, and at least one of the cells includes an initial value cell, where a value in the final value cell is used to modify a value in the initial value cell.
93. (Original) A computer program product as in Claim 91 wherein the iterative process is repeated for either a fixed number of times or until a condition defined in a condition cell no longer applies, or begins to apply.
94. (Currently Amended) An apparatus for programming using an electronic spreadsheet comprising:
- a computer software programming environment implemented using a spreadsheet, where the spreadsheet corresponds to an object in an object-oriented programming language, the object communicating with another object using a method that is specified in a cell of the spreadsheet;
 - the spreadsheet having cells that are associated with an iterative process repeating for one or more cycles, where the iterative process repeats the same action until a condition no longer applies; and
 - content in the spreadsheet causing changes to a computer software program implemented by the spreadsheet, such that the computer software program implemented by the spreadsheet is modifiable by the iterative process.
95. (Original) An apparatus as in Claim 94 wherein the modifiable content further includes:
- at least one of the cells associated with the iterative process is a final value cell;
 - at least one of the cells associated with the iterative process is an initial value cell;
 - and
 - a value in the final value cell which influences a value in the initial value cell in each cycle of the iterative process.

96. (Original) An apparatus as in Claim 94 wherein the iterative process is repeated for either a fixed number of times or until a condition defined in a condition cell no longer applies, or begins to apply.
97. (Currently Amended) A data processing system for programming using an electronic spreadsheet, the system comprising:
- means for creating a computer software programming environment including computer software implemented using a spreadsheet, where the spreadsheet corresponds to an object in an object-oriented programming language, the object communicating with another object using a method call that is specified in a cell of the spreadsheet:
 - means for defining cells in a spreadsheet that are associated with an iterative process that repeats for one or more cycles, where the iterative process repeats the same action until a condition no longer applies; and
 - at each cycle, means for determining whether to modify content in the cells associated with the iterative process, where modified content in the cells causes changes to computer software implemented using the spreadsheet.
98. (Previously Presented) A method of developing computer software according to Claim 1 further includes enabling an event to be defined in one of the cells of one of the spreadsheets, where the event includes an event type, an event handler, and an event target.
99. (Previously Presented) A computer program product according to Claim 9 further includes instructions enabling an event to be defined in one of the cells of one of the spreadsheets, where the event includes an event type, an event handler, and an event target.
100. (Previously Presented) An apparatus according to Claim 16 further comprising instructions in one of the cells of the spreadsheet enabling an event to be defined, where the event includes an event type, an event handler, and an event target.